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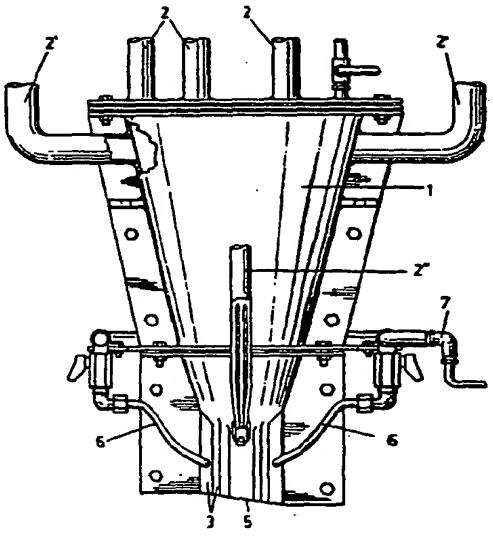
(54) Title: EXTRUSION DEVICE AND PROCESS FOR COMPOSITE ICE CONFECTION



(57) Abstract

The process and equipment make it possible to obtain edible ice confections with different flavours/colours, in which the body of the edible ice may be of any configuration but has zones or parts formed from masses of different flavour and/or colour. This is achieved by partition or division of the form of the body into elementary parts, each supplied from a different nozzle (2, 2' and 2'') through which products of different flavour and/or colour are delivered to these elementary parts or zones (3), each of which has the outline of a particular zone of the body to be obtained. All these parts (3) come to a common outlet (5) whose outline corresponds to that of the edible ice to be obtained. The formation of portions of small size within the same zone is effected by means of nozzles (2') with different, independent outlets.

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EXTRUSION DEVICE AND PROCESS FOR COMPOSITE ICE CONFECTION

FIELD OF THE INVENTION

The invention relates to method by which it is possible to obtain an ice confection with different flavours combined together in such a way as to give a characteristic body or image, but one in which there are distinct, well-differentiated zones each corresponding to a particular flavour and/or colour of edible ice confection.

The invention also provides equipment for giving practical effect to the invention in a simple and effective way. The term ice confection is used to include any frozen edible product, eg ice cream, ice milk, frozen yoghurts and frozen custards.

BACKGROUND TO THE INVENTION

The edible ice confection market has undergone considerable changes in recent years. One such change is that edible ices with two or more flavours are now being sold.

However an edible ice confection with various flavours is obtained, it cannot be considered satisfactory from the manufacturing point of view, as in some cases the process is based on superimposing separate bodies on a support, each of the bodies having a particular flavour. In other cases, the flavours are obtained by having different superimposed layers. Thus, edible ices with a core of a particular flavour and coatings of different flavours applied to this core, always using the principle of applying a coating to the core, then another on top of this and so on, are generally known.

No edible ices are known at present that have different flavours and at the same time present a specific image with distinct, well-differentiated zones, each corresponding to a particular flavour.

There is no large scale commercially available edible ice confection which for example, is in the shape of a human figure with the arms of one flavour, the head of another, the body of yet another, the legs of a different one again, and so on. A product of this form could be made by hand, but the demands of industrial production require such products to be made on a large scale to a high standard. Ice confections have been well characterised in the literature and general disclosures will be found in Arbuckle ("Ice Cream" published by AVI of Westport, Conneticut) and J Soc Dairy Technology 1990, 43(1), pp 17-20.

GENERAL DESCRIPTION OF THE INVENTION

The method proposed is based on a technique that enables an edible ice confection with quite distinct zones in different colours and/or flavours to be obtained, whatever the outline of the product obtained.

The technique on which the process is based consists of partitioning or dividing the body of the edible ice confection to be obtained into elementary parts, each one of these being supplied by edible ice of the desired flavour/colour. In this way, the separate parts of the body of edible ice obtained are of different flavours/ colours, in accordance with product delivered to each part.

The said process is performed by means of an extruder device that will have as many nozzles as there are different parts in the body of the edible ice confection to be obtained, even though many of these parts will have the

same flavour, but will logically occupy zones separate from others of a different flavour, so that each part or zone of the body requires a nozzle. All these nozzles discharge into the different channels that define the body obtained when they come together, these channels ultimately discharge into a common outlet whose outline corresponds to that of the body proper of the edible ice confection.

It is a basic characteristic of the process on the extruder mentioned that the temperature of the products that are to form the composite body of the edible ice at the outlet of the nozzles are selected to ensure the separate parts come to cohere together properly to enable the formation of a single body. If the temperature is too high there will be deformation and slipping in the zone where the outlet channels come together, which is disastrous to the appearance of the product, while if the temperature is too low the products will be frozen too hard and will not join together satisfactorily, the edible ice product will turn out like a jigsaw puzzle and its parts may even separate.

In summary, the basic object of the invention is to form portions of edible ice confection of very small dimensions with different colours/flavours in order to define zones in the resultant edible ice by treating these zones individually, that is considering them as independent nozzles. The ice confection may have addition parts added in a separate process, eg couverture or chocolate parts or areas.

The body of edible ice confection obtained will be cut at the outlet of the extruder by conventional means, such as a cutting wire or knife or the like, the individual shaped edible ices falling on to a conveyor belt on which there are collecting trays, then passing to the provision of a suitable support or stick for the edible ice, the freezing tunnel, wrapping and final packaging in boxes.

Optionally, in the zone where the separate channels unite to form the single body of edible ice confection with separate zones, each with a colour/flavour, there may be a number of external collateral tubes through which air is passed in order to increase the temperature of the walls and prevent the mass of edible ice from adhering to the nozzle itself or the outlet zone.

The flow rate through each nozzle is regulated individually by conventional means to ensure the rate of flow through each nozzle is correct, as excess of any one of these would lead to the bodies or shapes obtained being significantly convex, whereas it is usually desired to obtain a body of edible ice with a flat silhouette.

DESCRIPTION OF THE DRAWINGS

To complement this description and aid better understanding of the characteristics of the invention, the description is accompanied by a set of drawings that are an integral part of it; these drawings give illustrative, non-limiting representations as follows:

Figure 1 shows a side view of an extruder used to obtain an edible ice confection of a particular shape but with different flavours/colours due to the number of nozzles with which it is equipped;

Figure 2 shows the same device from a different elevation; and

Figure 3 is a bottom plan view of the extruder of the preceding figures, showing an edible ice confection with a specific shape having distinct zones, each with a corresponding flavour/colour and each obtained by means of the product injected through each of the nozzles represented in the preceding figures.

SPECIFIC DESCRIPTION OF THE INVENTION

As can be seen in Figure 1, the extrusion equipment for implementing the method for obtaining an edible ice with different flavours/colours comprises a body in the shape of a truncated cone (1) with a plurality of nozzles (2) leading to it so that an edible ice product with a distinct flavour may be delivered through each nozzle, or several of the nozzles may deliver the same flavour, that is to say, the flavours may be combined as desired. Each nozzle (2) discharges into a separate channel (3), each of these channels having a shape corresponding to a specific zone of the body of edible ice to be obtained (4). If, for example, the body is a human body and it is intended that the limbs should be of a particular flavour, and the head, eyes, feet and other parts of the body all of different flavours, to simulate specific zones of the body, including the clothing, each of these zones or parts will correspond to the shape of the separate channels (3). The arrival of these products of different flavours in consequence of the fact that they issue from nozzles (2) into which products with different flavours have been injected logically results in a body (4) with all these zones clearly differentiated as to flavour. At the outlet of these ducts (3), an edible ice body (4) is obtained through the cohesion of the products corresponding to each part or zone.

It is not necessary for each zone to differ by both colour and flavour. For some products a single flavour may be used while having zones extruded having different colours. The process allows a number of zones to be extruded having colour/flavour at the choice of the manufacturer.

The drawings show, by way of example, a pair of nozzles (2') that are in a different position than the rest of the nozzles (2) to indicate that these may correspond, for

example, to the product that will form the outer contour of the body of edible ice (4) or specific lateral zones of it. Similarly, there is shown in Figures 2 and 3 a nozzle (2") with various independent or distinct outlets, indicating that each one of these will cover or correspond to a very small zone or portion of the edible ice, so that these zones are obtained by treating them individually, that is to say considering them as an independent nozzle, so that the nozzle (2") has independent outlets to deal with these small portions in the overall body that are interrelated within a zone of the same mass.

At the bottom part, also called the transitional part, discharging into the general outlet (5), which logically corresponds to the outline of the ice cream body to be obtained (4), there are some tubes (6) that are supplied from a common pipeline (7) through which air is directed to raise the temperature of the walls of the nozzle and prevent the edible ice mass from adhering to them,

The invention provides a co-extrusion method which provides a consistent product over a period of time. That is, small changes in overrun and composition in supply to one zone can be compensated by changing the rate of supply to that zone. Temperature variation in the compositions and apparatus can also be compensated. Large areas of a human or animal figure, can be separated into a number of zones. Inconsistent supply to a large zone is removed by separating the zone into a number of individual smaller zones.

It is not considered necessary to expand this description, as anyone acquainted with the art will understand the scope of the invention and the advantages that flow from it. The materials, shapes, dimensions and disposition of the elements may be varied, always assuming there is no essential alteration to the nature of the invention.

CLAIMS

1. Process for obtaining an edible ice confection with different flavours/colours characterised in that the process comprises dividing the body or figure into elementary parts, each of these parts being supplied with an edible ice product with a flavour/colour distinct from that of the other parts or the same as that of some of them, then combining the separate edible ice products to obtain a single body of edible ice by cohesion of all the separate parts, all this at a temperature to ensure cohesion of the separate parts.

2. Process for obtaining an edible ice with different flavours/colours according to Claim 1 characterized in that the formation of portions of small size in the body of edible ice in a given zone is effected by treating these zones or portions individually.

3. Apparatus for performing the method of claim 1 or 2 characterized in that it comprises an extruder with a body in the shape of a truncated cone (1) with a plurality of nozzles (2) through which edible ice masses of different flavours are injected, these nozzles (2) discharging into independent channels or zones (3), each one of them with an outline corresponding to the part or zone of edible ice with a flavour and/or colour different from that of the other zones it is intended to obtain, all these channels (3) discharging into a common outlet (5) corresponding to the outline of the body of edible ice confection to be obtained.

4. Apparatus according to Claim 3 characterized in that there are nozzles (2') for injecting product that is to form specific zones of the body of edible ice confection.

5. Apparatus according to Claims 3 and 4 characterized in that there are special nozzles (2") that diverge through several independent outlets to produce portions of edible ices of small dimensions in a particular zone.

6. Apparatus according to Claim 3, 4 or 5 characterized in that above the zone in which the common outlet (5) is located there are channels (6) fed by a common duct (7) through which air is injected and directed towards the nozzles to prevent adhesion of the product or mass of edible ice to these nozzles.

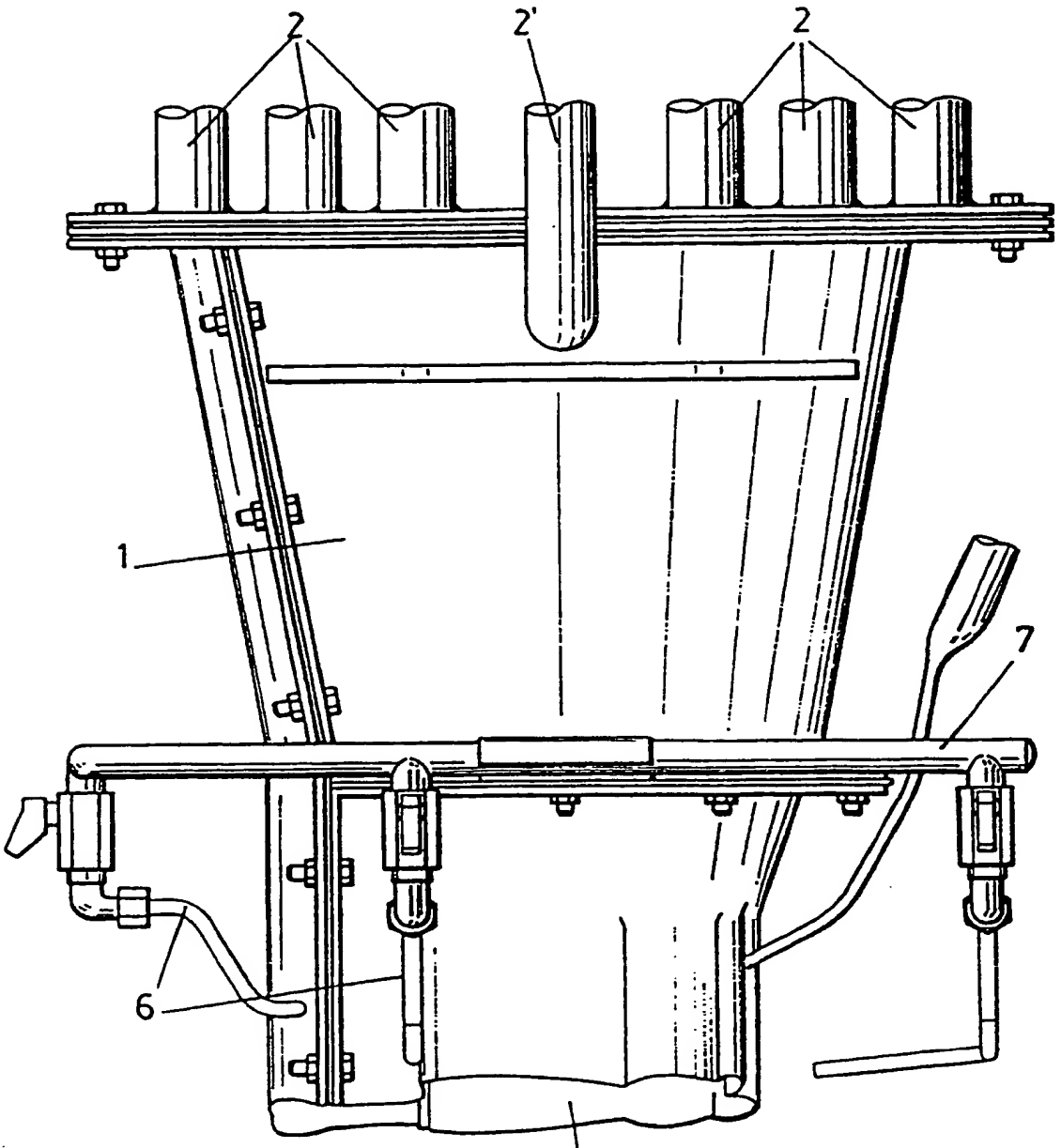

FIG.-1

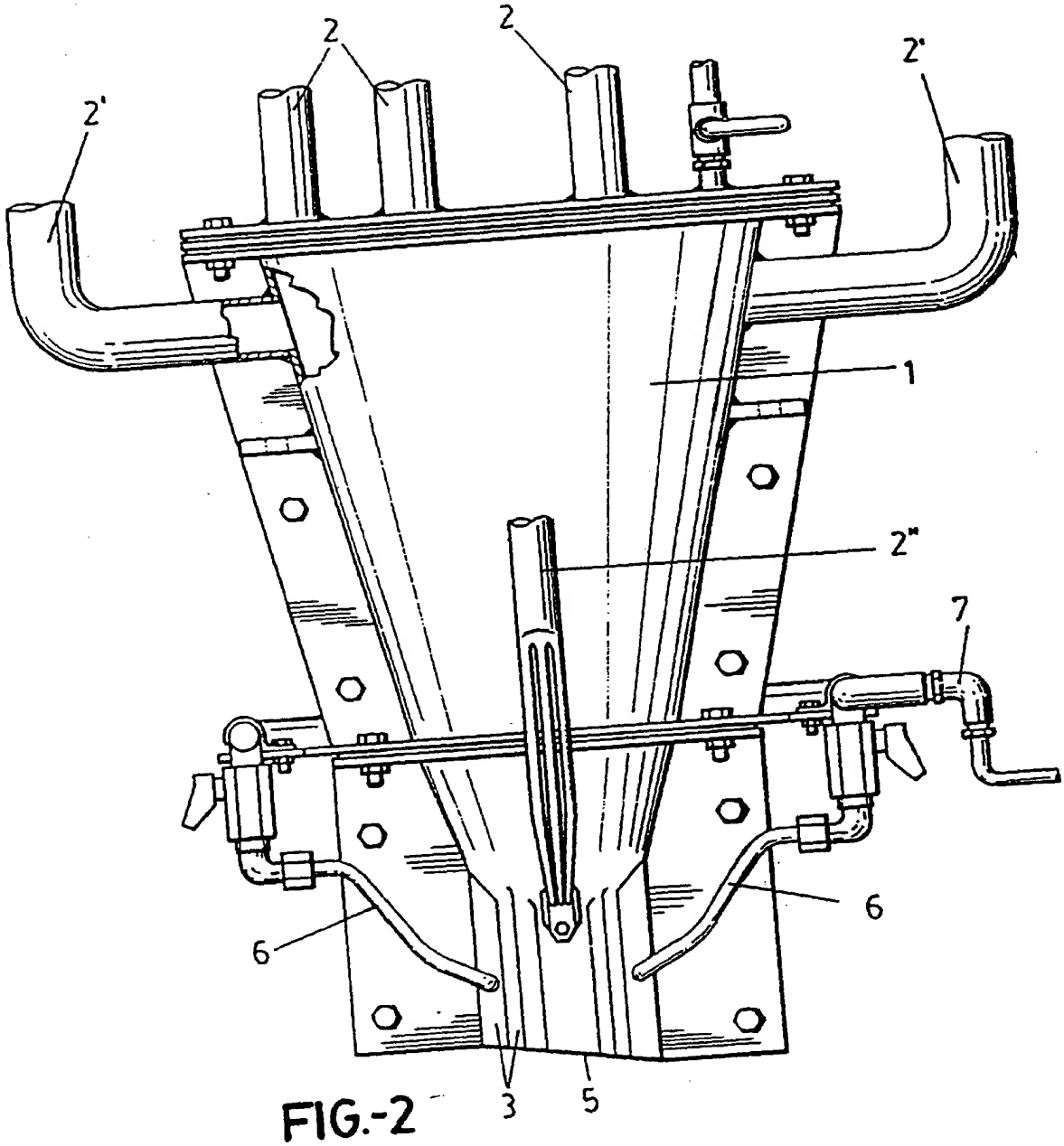

FIG.-2

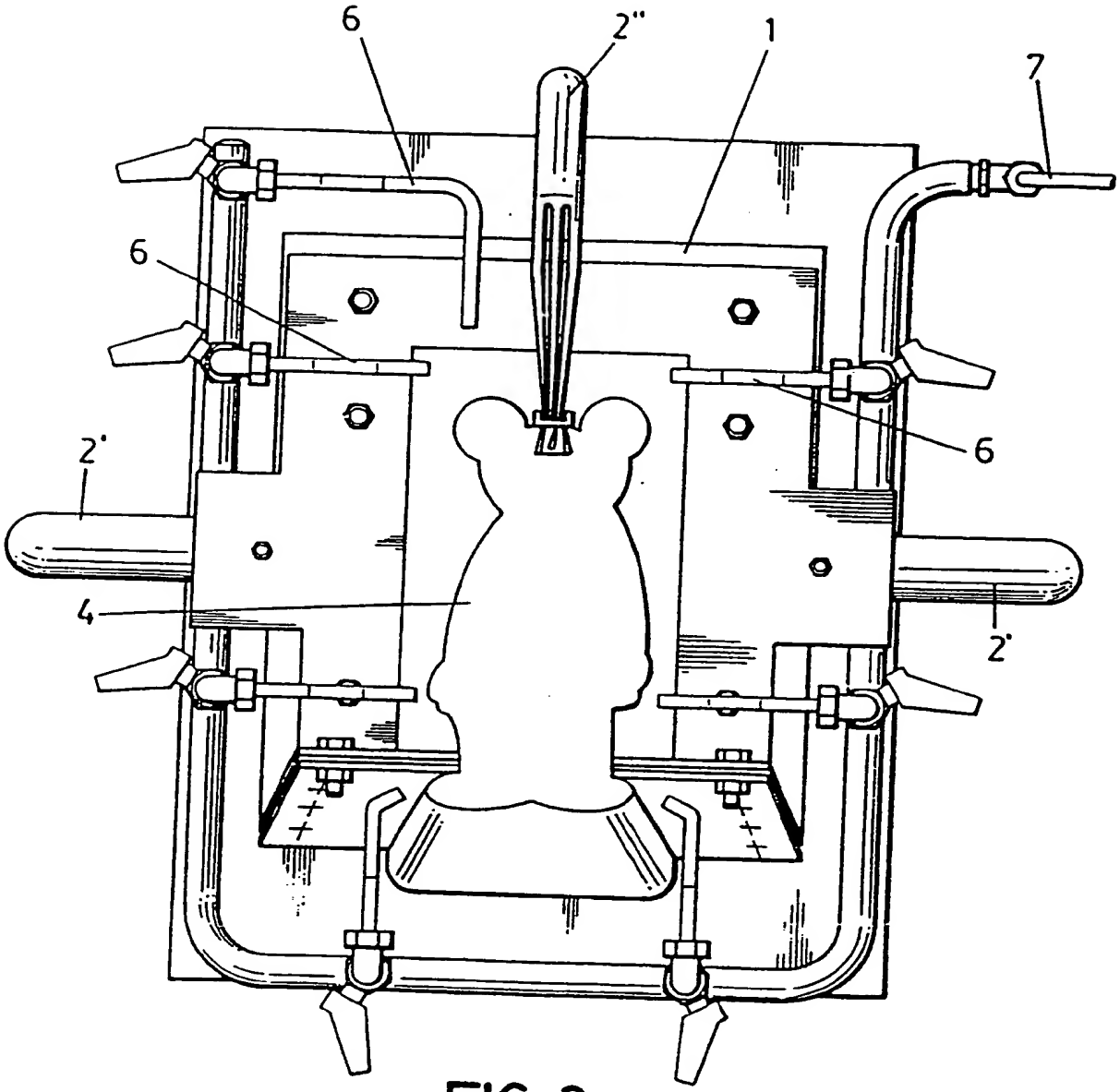

FIG.-3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 93/02479

A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 A23G9/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 5 A23G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,3 344 751 (W. R. CAMMACK ET AL.) 3 October 1967 see column 5, line 29 - line 56; claims; figures	1-6
X	BE,A,720 411 (ESKIMO PIE CORPORATION) 5 March 1969 see page 11, line 18 - line 21; figures	1-3
X	BE,A,624 881 (ESKIMO PIE CORPORATION) 15 March 1963 see the whole document	1-3

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US,A,1 693 988 (F. X. KUHN) 4 December 1928 see page 1, line 59 - line 89; figures 6,3 see page 5, line 47 - page 6, line 8; claim 1	1-3 6
A	US,A,2 246 871 (G. G. BALCH) 24 June 1941	

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-3344751		NONE	
BE-A-720411	05-03-69	NONE	
BE-A-624881		NONE	
US-A-1693988		NONE	
US-A-2246871		NONE	